

Remarks/Arguments

Reconsideration of the above-identified application in view of the present amendment is respectfully requested.

By the present amendment, claims 9, 10, 16 and 17 have been canceled. Claim 1 has been amended to include the limitation said foamed thermoplastic polyolefin elastomer padding material substantially covering said rim portion having a first thickness and said foamed thermoplastic polyolefin elastomer padding material substantially covering said spoke portion having a second thickness different from said first thickness. Support for this limitation can be found in claim 12 of the application.

Below is a discussion of the claim objection and 35 USC §103 rejections of claims 1, 3, 5-12 and 14-18.

Claim Objection

Claims 9, 10, 16, and 17 were objected to as failing to further limit the subject matter of a previous claim. Claims 9, 10, 16, and 17 have been canceled

35 USC §103 rejection

Claims 1, 3, 5-12 and 14-18 are rejected under 35 USC §103 as being obvious over U.S. Patent No. 4,738,157 to Nishijima et al. (hereinafter, "Nishijima et al.") in view of U.S. Patent No. 5,702,810 to Koseki et al. (hereinafter, "Koseki et al.").

The Office Action argues Nishijima et al. teach a steering comprising a rim portion, spoke portion, and foamed padding material with a first thickness and a second thickness covering the rim portion and the spoke portion and that Koseki et al. teach a weatherable foamed thermoplastic polyolefin elastomer padding material including an inner portion and an outer portion, the inner portion having a cellular structure and substantially uniform cell density and an outer portion free of interruption by cell. The Office Action further argues that Koseki et al. teach using a chemical foaming agent and including additives, such as fillers and colorants. The Office Action still further argues it would be obvious to modify the RIM polyurethane elastomer of Nishijima et al. which is a thermoset resin with the polyolefin taught in Koseki et al. in order to recycle the material and reduce pollution.

Claim 1 as discussed above was amended to include the limitation that the foamed thermoplastic polyolefin elastomer padding material substantially covering the rim portion has a first thickness and the foamed thermoplastic polyolefin elastomer padding material substantially covering the spoke portion has a second thickness different from said first thickness.

Claim 1 is patentable over Nishijima et al. in view of Koseki et al. because (1) Nishijima et al. in view of Koseki et al. do not teach or suggest that the foamed thermoplastic polyolefin elastomer padding material substantially covering the rim portion having a first thickness and the foamed thermoplastic polyolefin elastomer padding material substantially covering the spoke portion having a second thickness different from the first thickness would also have an inner portion covering the rim portion and spoke portion with a substantially uniform cell density and (2) Nishijima et al. and Koseki et al. neither teach or suggest the polyolefin elastomer of Koseki et al. is recyclable or would reduce pollution.

Nishijima et al. teach a steering wheel with spoke and core portions that are covered with an foamed or non-foamed synthetic elastomer. Nishijima et al. appear to show in Fig. 4 that the padding material covering the rim portion has first thickness and the padding material covering the spoke portion has a second thickness substantially different than the first thickness. Nishijima et al., however, do not teach that the padding material covering the rim portion and the spoke portion has a substantially uniform cell density. Nishijima et al. is silent on this feature.

Koseki et al. teach a foamed thermoplastic polyolefin elastomer for a cushion that can be prepared by injection molding. Koseki et al., however, do not teach that the foamed thermoplastic polyolefin elastomer can cover the rim portion and spoke portion of a steering wheel, the foamed thermoplastic polyolefin elastomer covering the rim portion and the second portion can have two different thicknesses, and that a foamed polyolefin elastomer with two different thicknesses covering the rim and spoke portion of a steering will have a substantially uniform cell density.

Moreover, injecting molding the foamed thermoplastic polyolefin elastomer as taught in Koseki et al. to form a padding material with two different thicknesses would not produce a foamed padding material with a substantially uniform cell density.

As noted in the specification of the present application after injection molding:

"It was found that the areas of foamed thermoplastic polyolefin elastomer that have a lesser thickness cool to a temperature below the melting temperature of the thermoplastic polyolefin elastomer in a shorter period than the areas of foamed thermoplastic elastomer material that have a greater thickness. For example, the foamed thermoplastic polyolefin elastomer that surrounds the rim portion of the steering wheel armature and that has an average thickness of the about 0.5 inches, cools to a temperature below the melting temperature of the thermoplastic polyolefin elastomer in a shorter period than the foamed thermoplastic polyolefin elastomer that surrounds the spoke portions 18 of the steering wheel armature and that has an average thickness of about 0.75 inches to about 1.5 inches. Since the chemical foaming agent reacts and produces gas at an elevated temperature and the chemical foaming agent in the thermoplastic polyolefin elastomer surrounding the rim portion is at an elevated temperature for a shorter period, the degree of foaming of the thermoplastic polyolefin elastomer surrounding the rim portion is substantially less than the degree of foaming of the thermoplastic polyolefin elastomer surrounding the spoke portions. This difference in the degree of foaming results in a foamed padding material being formed that has outer portion with a thicker skin and an inner portion with a substantially lower cell density (i.e., the percentage of cells per cm^2) around the rim portion 14 of the steering wheel armature 12 than around the spoke portions 18 of the steering wheel armature 12.

Thus, if the thermoplastic elastomer of Koseki et al. is injected into a mold with different thicknesses a padding material would be formed without a substantially uniform cell density. Koseki et al. support this assertion at by stating at column 9, lines 34-38 that:

"For uniform expansion of the whole expandable elastomer 3, it is preferable that the thickness of the space in the mold 2 which is to be filled with the expandable elastomer 3 be uniform."

Thus, Nishijima et al. in view of Koseki et al. do not teach or suggest the foamed thermoplastic polyolefin elastomer padding material substantially covering the rim portion having a first thickness and the foamed thermoplastic polyolefin elastomer padding material substantially covering the spoke portion having a second thickness different from the first thickness would also have an inner portion covering the rim portion and spoke portion with a substantially uniform cell density.

Additionally, the Office Action fails to provide a motivation to combine the teachings of Nishijima et al. and Koseki et al. The Office Action argues that it would be obvious to modify the RIM polurethane as taught by Nishijima et al with the polyolefin elastomer of Koseki et al. in order recycle the material and reduce pollution.

Koseki et al. neither teach or suggest that the thermoplastic polyolefin elastomer of Koseki et al. is recyclable or will reduce pollution. The mere fact that an elastomer is a thermoplastic does not make recyclable or capable of reducing pollution. The thermoplastic elastomer taught in Koseki et al. is combined with a number of other materials that would potentially prevent it from being recycled. The applicants therefore respectfully request that the Office Action provide some evidence that the thermoplastic polyolefin elastomer taught in Koseki et al. is recyclable or reduces pollution or withdraw the rejection.

Claims 3, 5-8 , and 11 depends directly from claim 1 and therefore should be allowable because of the aforementioned deficiencies of the rejection with respect to claim 1 and for the specific limitations recited in claims 3, 5-8 , and 11.

Claim 12 contains similar limitations to claim 1 and therefore should be allowable for the aforementioned deficiencies discussed with respect to claim 1 and for the specific limitations recited in claim 12.

Claims 14, 15 and 18 depend from claim 12 and therefore should be allowable because of the aforementioned deficiencies of the rejection with respect to claim 12 and for the specific limitations recited in claims 14, 15, and 18.

In view of the foregoing, it is respectfully submitted that the above-identified application is in condition for allowance, and allowance of the above-identified application is respectfully requested.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,



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